

Using Cooperative Learning Structures in Physical Education

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Cooperative learning is a way of thinking about and implementing physical education that leads to improvements in both teaching and learning. It is defined as small-group instruction and practice that uses positive student interactions as a means of achieving instructional goals. Students work as heterogeneous teams in an inclusive learning environment, with each student's contribution needed for team goal achievement. Any physical education content can be taught using cooperative learning.

Although many physical educators use some form of cooperative learning in their programs, they may not be aware of the elements of cooperative learning that should be considered when designing these activities or of the cooperative learning structures that can assist them in this design. This article presents five such elements and five such structures that physical educators can use to achieve the national standards (National Association for Sport and Physical Education [NASPE], 1995), particularly standards five, six, and seven, which emphasize social interaction, inclusion, acceptance of others, and the development of cognitive skills.

Cooperative learning offers an excellent opportunity for positive outcomes across the psychomotor, cognitive, and affective domains (Dunn & Wilson, 1991). In addition to maximizing practice time, it can teach students responsibility by giving them the power to organize and operate their groups, to give each other feedback, and to collaborate on solutions to their problems (Dyson, in press). Teaching students responsibility is not a new concept in physical education; Hellison (1973) was promoting the incorporation of social responsi-

bility within our programs over 25 years ago. In a 1996 article, he argued that changing family structures, increased diversity in student backgrounds, and risk behaviors such as drug use, violence, and dropping out of school had made this concept even more important. He also provided evidence that students can learn to be more responsible when given the appropriate learning experiences.

The effects of cooperative learning have been thoroughly examined in K-12 general education (e.g., see Johnson, Maruyama, Johnson, Nelson, & Skon, 1981; Kagan, 1992; Slavin, 1996). Cooperative learning has resulted in benefits such as higher achievement scores, improved inter-group relations, increased ability to work with others, and enhanced self-esteem (Johnson et al., 1981; Kagan, 1992; Slavin, 1996). However, less research on this subject exists in physical education. A few studies have demonstrated that cooperative learning in physical education can enhance social interactions among kindergarten (Grineski, 1989b) and preschool children (Grineski, 1989a), and improve both the social interactions and physical fitness of elementary school children (Grineski, 1993). Dyson (in press) found that fifth- and sixth-graders can develop both social and motor skills in cooperative learning volleyball and basketball units.

Several other articles have promoted the use of cooperative learning and social skills in physical education. Dunn and Wilson (1991) encouraged teachers to shift responsibility to students in order to engage them in self-directed learning. DeLine (1991) supported the idea of teaching social skills in physical education. He believed that by participating in a

cooperative social-skills unit at the beginning of the school year, students would be more able to practice and apply social skills later in the year. Yoder (1993) demonstrated that when dance is taught using cooperative learning, student achievement increases in both dance and social skills. With cooperative learning, the instructor is no longer the sole director of instruction but rather is working to facilitate the students as they learn and discover.

Cooperative Learning Elements

In order for learning to be maximized, the following five components of cooperative learning should be considered by physical educators: team formation, positive interdependence, individual accountability, positive social interaction skills, and group processing. We have found many variations of cooperative activities, but learning and student enjoyment cannot be maximized without these elements.

Team Formation. Cooperative learning groups should be heterogeneous in gender, race, economic status, and ability in order to take advantage of the benefits associated with group diversity. This is in line with NASPE standard six, which requires that students demonstrate "understanding and respect for differences among people in physical activity settings" (NASPE, 1995, p. 1). When first implementing cooperative learning, start with pairs. Pairs are easier to manage, and they allow for maximum participation, enhanced communication, and increased opportunity to practice necessary social skills. Pairs also transition easily to larger groups of four or six (Johnson, Johnson, & Holubec, 1998).

Positive Interdependence. Positive

interdependence occurs when each group member learns to depend on the rest of the group as they all work together to complete a task. For example, in the "Partner Cards" activity, pairs of students select cards and perform the indicated activity. If two fifth-graders drew the card that read, "Do 100 push-ups," both students would need to contribute push-ups to reach the goal of 100. Most fifth-graders are not capable of performing so many push-ups by themselves, yet with a partner and by adding together push-ups from several repetitions, fifth-graders can achieve this goal (Johnson et al., 1998; Kagan, 1992; Slavin, 1996).

Individual Accountability. Because individual student learning is a desired result of cooperative learning, it is essential that individual students demonstrate what they have learned as a result of participating in cooperative activities. This can be accomplished through teacher questioning, student presentations, student explanations, peer teaching, or completion of written work (Johnson et al., 1998; Slavin, 1996).

Positive Social Interaction Skills. One reason that learning is sometimes minimized in cooperative activities is that teachers do not verbalize, model, and reinforce the important social skills required for goal achievement (e.g., listening to others, providing feedback, resolving conflicts, encouraging others, taking turns, expressing enjoyment in the success of others). Cooperative learning is an excellent means of working towards greater understanding of others' perspectives, but only if the appropriate social skills are taught (DeLine, 1991; Dunn & Wilson, 1991).

Group Processing. "Group processing" is the time allotted to discussing whether group members are achieving their goals and maintaining effective working relationships. This verbal reflection occurs after a learning task and serves as an opportunity for students to express themselves and for the teacher to provide specific, relevant feedback. Group processing can also help ensure accountability. Many physical educators refer to this process as a "debrief."

Cooperative Learning Structures

In order for physical educators to use cooperative learning for activities that go beyond simple cooperative games, they need to understand and put into practice cooperative learning structures. These structures are methods of arranging students for interaction during cooperative learning; they are content-free, and serve as frameworks for lessons. Through such structures, any physical education content can be taught and learned in a cooperative manner. The following modified structures—based on work completed by Kagan (1992), Johnson and Johnson (1975), Johnson, Johnson, Holubec, and Roy (1984), Aronson (1978), Orlick (1978, 1982), and Slavin (1980)—are appropriate for use in physical education.

Think-Share-Perform

"Think-Share-Perform" is based on "Think-Pair-Share," a structure developed by Kagan (1992). This is a strategy for encouraging participation through critical thinking, sharing, negotiating, and performing. It is particularly useful for creating games, dances, and obstacle courses, as well as for practicing game and sport strategies through problem solving.

Implementation

1. The teacher presents students with challenging movement tasks or tactical problems.
2. Students individually think of possible solutions.
3. Students are divided into groups and asked to share their individual responses with other group members.
4. Students perform the activities suggested by each group member and share responses to the activity, or decide how to combine suggestions to complete the task or solve the problem.
5. Each group performs its combined movement for the rest of the class.

Sample Activity: Body Parts a'Movin'

The teacher provides movement chal-

lenges to groups of four students (e.g., "Move with three feet touching the ground and hands joined," or "Move with five body parts on the ground"). Within the groups, students divide into pairs; individuals think of possible solutions and then share responses with their partner. Then each pair shares its solutions with the other group members. Finally, the group members use all their responses to determine an effective way of accomplishing the movement task (Grineski, 1996).

As an assessment, groups perform their movement patterns for the rest of the class. When students are challenged to rely on each other while creating their patterns, they achieve standard seven by learning "that physical activity provides opportunities for enjoyment, challenge, self-expression, and social interaction" (NASPE, 1995, p. 1).

Pairs-Check-Perform

"Pairs-Check-Perform" is based on Kagan's (1992) "Pairs Check" structure. This structure requires individuals to stay on-task and help others learn, and is useful when learning locomotor, manipulative, sport, gymnastic, or aquatic skills. This is similar to Mosston's (1981) "reciprocal style" of teaching, wherein students are assigned to work together in pairs, with each student serving alternately as observer and performer.

Implementation

1. The teacher explains and demonstrates the skill to be learned and then checks for student understanding.
2. The teacher places students in groups of four, divided into pairs.
3. In each pair, student #1 practices the skill, while student #2 provides encouragement and specific feedback.
4. Once student #1 has performed the skill correctly, he or she becomes the encourager/helper, and student #2 becomes the performer.
5. When both students in each pair have performed the skill correctly, they join the other pair in their group, and each student performs the skill again. If all group members agree that the performances were correct, the group

begins learning and performing the next skill. If there is disagreement, students continue working on the performances until all agree.

Sample Activity: Shooting in Soccer

Students are assigned to groups of four and divided into pairs. In each pair, student #1 practices shooting a soccer ball into a modified goal while student #2 watches and encourages good form by using learning cues such as "step to the ball," "non-kicking foot beside the ball," "use instep," and "eyes on the ball." Once student #1 shows good form, the students reverse roles. Then the pairs join and each of the four students shoots the ball while the other group members observe and check for good form.

Jigsaw Perform

"Jigsaw Perform" is based on Aronson's (1978) "Jigsaw" activity. In this structure, each student is responsible for learning and performing a portion of the content and then teaching his or her portion to other group members. There is strong positive interdependence during Jigsaw Perform, as each student depends on others for information. This structure can be used for developing routines, creating stations, teaching dance, and teaching and reviewing motor skills and tactics.

Implementation

1. The teacher assigns a multi-component task to a small group of students.
2. Each group member is responsible for learning and practicing one assigned component.
3. Each group member teaches his or her assigned part to the group.
4. The whole group performs the task.

Sample Activity: Body Parts Aerobics

To create an aerobic routine, individual students are assigned a component of the routine and are responsible for teaching this part to other group members. The small groups create an

aerobic routine that matches a musical selection, uses specified body parts, and results in elevated heart rates. The groups take turns teaching their routines to the other groups. Students are assessed on their ability to include three arm, one head, and four to six leg movements in a continuous motion for eight to 12 minutes.

In creating the movement routine, students will be able to achieve standard five by demonstrating "responsible personal and social behavior in physical activity settings" (NASPE, 1995, p. 1). Students are required to work together to make up the routine and to share the responsibility for teaching it to others. This division of labor and sharing encourages students to be responsible for their own learning and for teaching others. They also learn to respect others' ideas and work and to rely on all group members, thereby achieving standard six.

Co-op Play

"Co-op Play" is based on the "Learning Together" paradigm described by Orlick (1978, 1982) and Johnson et al. (1984). Co-op Play stresses working together to achieve success in challenging, inclusive activities. Co-op Play is an appropriate structure for modifying or creating games, dances, and obstacle courses.

Implementation

1. The teacher explains and demonstrates the activity and checks for understanding, or teaches the activity through problem-solving questions.
2. The teacher explains and models the necessary social skills and emphasizes that the groups will not be successful without these skills.
3. The teacher reinforces the idea that individual students can achieve their goal only when all group members contribute.
4. Students participate in the activity while the teacher reinforces skills and behaviors that result in goal achievement.
5. At the end of the activity, students participate in a group processing session facilitated by the teacher,

who encourages them to think about the activity and to share their thoughts.

Sample Activity: Human Obstacle Course

Several small groups of students make obstacles using their joined bodies. These "human obstacles" are spread throughout the play space. Students in the remaining groups hold hands and attempt to negotiate the obstacles without touching them. Each time an obstacle is accurately negotiated, the group scores a point. Group roles are then reversed. All group points can be added to encourage a high combined score (Orlick, 1982; Grin-eski, 1996).

At the end of the class, the teacher facilitates group processing. Assessment is based on successful negotiation of the obstacle course as a group. The Human Obstacle Course can also help students achieve standards six and seven (NASPE, 1995).

Learning Teams

"Learning Teams" are based on Slavin's (1980) "Student Teams-Achievement Divisions" and on "Learning Together" (Johnson et al., 1984). Learning Teams give students the opportunity to share leadership and responsibility roles and to use collaborative skills to achieve group goals. They are most useful for teaching sports skills and tactics, but can be readily applied to most any physical education content. Student roles such as "recorder," "encourager," "coach," and "equipment manager" are used to facilitate group activity.

Implementation

1. The teacher explains and demonstrates the selected skill or tactic and checks for understanding. Students are divided into groups of three to six.
2. The teacher describes student performance outcomes and the physical, social, and cognitive skills necessary to achieve the goal. These outcomes and skills are listed on a task sheet for the "recorder."
3. The teacher can assign specific roles to each group member. For

example, the "coach" provides specific feedback to the group members to help them improve their performance; the "checker" checks that every student completes the task; the "recorder" makes note of each student's performance on a task sheet; the "demonstrator" models the task; and the "encourager" motivates everyone to become involved.

4. Students carry out their assigned roles during the task. Roles can be changed for the next task so that all students can attempt each role.

5. Student performance can be assessed by group members using a task sheet.

6. At the end of class, time is allotted for group processing, wherein the students' experiences during skill or tactical practice are discussed and the teacher encourages them to set goals for the next lesson.

Sample Activity: Setting Up a Volleyball Attack

Sixth-grade students are assigned roles within their groups and then asked to think of possible tactics to set up a volleyball attack. The objective is to accurately forearm pass a free ball to the setter position. Learning cues can be listed on a task sheet; possible cues include "bend your knees," "keep your arms straight and flat," and "move to the ball." Group members share and then practice possible tactics. They then choose the best tactic for their group. Each group of students then plays against another group in order to use their tactic in a modified game situation. At the end of class, students discuss their tactics in a group processing session facilitated by their teacher. Learning Teams can help students readily achieve standards five and seven (NASPE, 1995).

Conclusion

Within the general cooperative learning field, there are at least 100 different structures available to help teachers plan their lessons (Kagan, 1992). Many of these can be adapted to physical education, as demonstrated by the five modified structures

described in this article. High-quality, goal-directed physical education programs have the potential to affect students in ways no other school subject can (Metzler, 2000). When lessons are designed to include the essential elements of cooperative learning, students can move closer to attaining numerous positive outcomes in psychomotor, cognitive, and affective skills. Cooperative learning can provide students with opportunities to acquire skills and tactics, develop competence in fitness, positively interact with one another, and support peers in their efforts to perform. It can also enable teachers to achieve more effectively all seven national standards for physical education.

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